

WHAT IS CLAIMED IS:

1. An apparatus for holding a stable condition at two positions comprising:

5 a driving magnet having driving magnetic poles and adapted to be movable in two directions;

a driven magnet having driven magnetic poles arranged to be always repulsed by the driving magnetic poles and adapted to be movable in two directions;

10 a motion limiting means for limiting the movement of the driven magnet; and

a driving means for driving the driving magnet in two directions;

wherein a direction of the repulsion force applied to the driven magnet by the driving magnet is changed, at a stage during which the driving magnet is moved to a first moving direction by the driving means, to a second acting direction of repulsion force opposite to a first acting direction of repulsion force which has been caused until said stage;

and wherein a direction of the repulsion force applied to the driven magnet by the driving magnet is changed, at a stage during which the driving magnet is moved to the second moving direction opposite to the first moving direction by the driving means, to the first acting direction of repulsion force opposite to the second acting direction of repulsion force which has been caused until said stage.

2. An apparatus for holding a stable condition at two positions of claim 1 wherein the driving means is made of shape-memory alloy and includes a driving element for driving the driving magnet.

3. An apparatus for holding a stable condition at two positions of claim 1 or 2 wherein an amount of movement of the driving magnet is larger than that of the driven magnet.

4. An apparatus for holding a stable condition at two positions of any one of claims 1~3 wherein the driving magnet and the driven magnet are moved in parallel with each other.

5 5. An apparatus for holding a stable condition at two positions of any one of claims 1~3 wherein at least one of the driving magnet and the driven magnet are moved in rotation.

6. An apparatus for holding a stable condition at two positions of any one of claims 1~5 wherein the driving means comprises a first driving element made of shape-memory alloy for driving the driving magnet toward the first moving direction, and a second driving element made of shape-memory alloy
10 for driving the driving magnet toward the second moving direction.

7. An apparatus for holding a stable condition at two positions of any one of claims 1~5 wherein the driving means comprises a driving element made of shape-memory alloy, the driving element includes a first driving element
15 portion for driving the driving magnet toward the first moving direction and a second driving element portion for driving the driving magnet toward the second moving direction, the driving means further comprises a first wiring for supplying a current to the first driving element portion, a second wiring for supplying a current to the second driving element portion, and a power
20 supplying portion for selectively supplying the current to the first wiring or the second wiring.

8. A lens apparatus having a lens system including a moving lens comprises:

a lens supporting member;

25 an apparatus for holding a stable condition at two positions of any one of claims 1~7 mounted on the lens supporting member; and

the moving lens can be driven by the movement of a driven magnet of the apparatus for holding a stable condition at two positions.